

PREVALENCE OF ECTOPARASITE INFESTATION IN NEONATE YARROW'S SPINY LIZARDS, *SCELOPORUS JARROVII* (PHRYNOSOMATIDAE), FROM ARIZONA

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While it is well known that ectoparasites infest lizards (Frank 1981), we know of no reports concerning how quickly newborn (neonate) lizards are infested under natural conditions. Ectoparasites have been shown to cause a diffuse inflammatory response in the skin of infected lizards from natural populations (Goldberg and Bursey 1991, Goldberg and Holshuh 1992). The purpose of this investigation is to report the age at which ectoparasite (chigger and mite) infestation first occurs in neonate Yarrow's spiny lizards (*Sceloporus jarrovi*). This lizard is well suited for determining age at which infestation first occurs since it is a live-bearing lizard in which parturition occurs within a short period of time near the end of June each year (Goldberg 1971). This contrasts with egg-laying lizards that may contain eggs for several months (Goldberg 1973), with hatchlings emerging over an extended period. Goldberg and Bursey (1992) reported on prevalence of the nematode *Spauligodon giganticus* in neonate *S. jarrovi*.

METHODS

Thirty-six neonate *S. jarrovi* were collected by hand or hand-held noose 28–30 June 1991 at Kitt Peak (31°55'N, 111°59'W, elevation 1889 m) in the Baboquivari Mountains, 85 km SW of Tucson, Pima County, Arizona. Lizards were measured to the nearest mm snout-vent length (SVL), and ectoparasites were counted at time of capture. Sizes of these wild-caught specimens were compared to 223 *S. jarrovi* neonates born of 37 female captive lizards in 1967–69 (Goldberg 1970).

Specimens were deposited in the herpetology collection of the Los Angeles County Natural History Museum (LACM) (139070–139105).

RESULTS AND DISCUSSION

Lizards in the 1991 sample averaged 30.1 ± 2.0 mm SVL, range 26–36 mm. Eighteen of the 36 (50%) neonate *S. jarrovi* were infested by ectoparasites (Table 1). Seventeen (47%) were infested by chiggers (*Eutrombicula lipovskyana*), with a mean intensity of 6.5 ± 6.9 and a range of 1–26 chiggers per lizard. Three (8%) lizards were infested by larval *Geckobiella texana*, with a mean intensity of 3.0 ± 2.6 and a range of 1–6 mites per lizard. Adult *G. texana* were not present. Two infected lizards had concurrent infections (*E. lipovskyana* and *G. texana*). The sample of 19 male and 17 female lizards contained 11 infested males (58%) and 7 infested females (41%). There was no statistical difference in rate of ectoparasite infestation between males and females (chi square = 1.0, 1 df, $P > .05$). Likewise, there was no statistical difference in intensity of infestation between male and female lizards (Kruskal-Wallis statistic = 0.46, 1 df, $P > .05$; *E. lipovskyana* and *G. texana* combined). Mean intensities were 5.7 ± 6.3 for infested males and 8.14 ± 9.20 for infested females.

Eutrombicula lipovskyana was found most frequently within skin folds on both ventrolateral surfaces of the neck (the mite pockets of Arnold 1986), but they were occasionally encountered in other areas of the body. *Geckobiella texana* was taken from the hind legs only. Representative specimens were deposited

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TABLE 1. Infestation of neonate *Sceloporus jarrovi* by ectoparasites.

SVL	N	# with <i>Eutrombicula lipovskiyana</i> (#, intensity of chiggers per lizard)	# with <i>Geckobiella texana</i> (#, intensity of mites per lizard)
26	1	0	0
27	2	1 (26)	0
28	7	4 (5, 2, 1, 1)	0
29	3	1 (3)	1 (1)
30	8	4 (13, 8, 7, 2)	1 (2)
31	7	3 (6, 3, 2)	0
32	5	2 (2, 1)	0
33	2	1 (16)	0
34	0	—	—
35	0	—	—
36	1	1 (13)	1 (6)

in the U.S. National Parasite Collection (Beltsville, Maryland 20705) as U.S. National Helminthological Collection Nos. 81992 and 82077 for *E. lipovskyana* and *G. texana*, respectively.

Neonates born in captivity averaged 28.03 ± 0.98 mm SVL and ranged from 26 to 30 mm (Goldberg 1970). Thus, we estimate our field-collected sample to range from 1 day (those of 26–30 mm SVL) to 2 weeks (36 mm SVL) of age. It would appear that infestation can occur during the first few days of life, indeed, perhaps even on the day of birth (Table 1). To our knowledge, this is the only report indicating when ectoparasitic infestation may first occur in the life history of lizards. The correlation coefficient (*R*) between SVL and number of mites was 0.16, suggesting to us that infestation of neonates by mites is opportunistic and can occur at any time after birth. Loomis and Stephens (1973) noted that hatchling *Uta stansburiana* from Joshua Tree National Monument, California, had very few chiggers attached but acquired more mites as they grew. They gave no estimate of age when infestation might first occur. *Sceloporus jarrovi* neonates grow rapidly, many of them reaching sexual maturity by autumn when they are 5 months of age and

average 54 mm SVL (Ballinger 1973). We cannot speculate on the infestation of older juvenile *S. jarrovi* since seasonal occurrence and abundance of *E. lipovskyana* are yet to be determined.

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